

**§ 179.41**

**21 CFR Ch. I (4–1–15 Edition)**

90 percent of the emission at a wavelength of 253.7 nanometers (2,537 Angstroms).

(b) The ultraviolet radiation is used or intended for use as follows:

Irradiated food	Limitations	Use
Food and food products .....	Without ozone production: high fat-content food irradiated in vacuum or in an inert atmosphere; intensity of radiation, 1 W (of 2,537 Å. radiation) per 5 to 10 ft. <sup>2</sup> .	Surface microorganism control.
Potable water .....	Without ozone production; coefficient of absorption, 0.19 per cm or less; flow rate, 100 gal/h per watt of 2,537 Å. radiation; water depth, 1 cm or less; lamp-operating temperature, 36 to 46 °C..	Sterilization of water used in food production.
Juice products .....	Turbulent flow through tubes with a minimum Reynolds number of 2,200..	Reduction of human pathogens and other microorganisms.

[42 FR 14635, Mar. 15, 1977, as amended at 65 FR 71057, Nov. 29, 2000]

**§ 179.41 Pulsed light for the treatment of food.**

Pulsed light may be safely used for treatment of foods under the following conditions:

(a) The radiation sources consist of xenon flashlamps designed to emit broadband radiation consisting of wavelengths covering the range of 200 to 1,100 nanometers (nm), and operated so that the pulse duration is no longer than 2 milliseconds (msec);

(b) The treatment is used for surface microorganism control;

(c) Foods treated with pulsed light shall receive the minimum treatment reasonably required to accomplish the intended technical effect; and

(d) The total cumulative treatment shall not exceed 12.0 Joules/square centimeter (J/cm<sup>2</sup>.)

[61 FR 42383, Aug. 15, 1996]

**§ 179.43 Carbon dioxide laser for etching food.**

Carbon dioxide laser light may be safely used for etching information on the surface of food under the following conditions:

(a) The radiation source consists of a carbon dioxide laser designed to emit pulsed infrared radiation with a wavelength of 10.6 micrometers such that the maximum energy output of the laser does not exceed  $9.8 \times 10^{-3}$  joules per square centimeter (J/cm<sup>2</sup>);

(b) The carbon dioxide laser shall be used only for etching information on the skin of fresh, intact citrus fruit, providing the fruit has been adequately washed and waxed prior to laser etching, and the etched area is immediately rewaxed after treatment; and

(c) The maximum total energy to which the etched citrus fruit is exposed from the use of the carbon dioxide laser shall not exceed  $1.5 \times 10^{-3}$  J, and the maximum total etched surface area of the citrus fruit shall not exceed 0.122 cm<sup>2</sup>.

[77 FR 34215, June 11, 2012]

**Subpart C—Packaging Materials for Irradiated Foods**

**§ 179.45 Packaging materials for use during the irradiation of prepackaged foods.**

The packaging materials identified in this section may be safely subjected to irradiation incidental to the radiation treatment and processing of prepackaged foods, subject to the provisions of this section and to the requirement that no induced radioactivity is detectable in the packaging material itself:

(a) The radiation of the food itself shall comply with regulations in this part.

(b) The following packaging materials may be subjected to a dose of radiation, not to exceed 10 kilograys, unless otherwise indicated, incidental to the use of gamma, electron beam, or X-radiation in the radiation treatment of prepackaged foods:

(1) Nitrocellulose-coated or vinylidene chloride copolymer-coated cellophane complying with §177.1200 of this chapter.